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An Unpublicized Agency...

By JEFFERSON THOMAS
News Highlights, Florida Farm Hour

Not soon shall we look again on its like. California has no duplicate and in Florida only one exists. Meaning, if you please a public-service organization which refrains from seeking publicity. In fact, this remarkable unit seems actually to avoid the limelight. Strangely enough, it operates largely in the citrus field, where almost every other group finds radio and newspaper notoriety the very breath of life, and conducts an official publication that the people interested may be kept fully informed concerning its activities. Less strange, perhaps, is the fact that the agency which has so consistently declined to toot its own horn is top-ranking in performance for the good of the fruit industry. Grove operators and shipping factors will be saved approximately two and a half million dollars during the current marketing period as the direct result of its work. Yet even that major achievement has been given only minor mention on the air and through the press, in some instances the broadcasts and the stories crediting another outfit with the accomplishment. Disregarding the inclinations it has repeatedly evidenced for performance without fanfare from trumpets and like fufawraw, a standing salute is proposed at this time to the Growers' and Shippers' League of Florida.

Rail carriers serving the state began enforcing tariffs at the beginning of the present citrus season which penalized over-packing and during the first few weeks the shippers paid large sums in the higher freight rates assessed. Devised by the freight container bureau maintained in the Association of American Railroads, the regulations were directed at the so-called "bulge pack," which had been a subject of controversy for a long time. California has not used the method extensively and her industry leaders sometimes contended that it should be abolished altogether. Florida factors had not been wholly lacking which sympathized with that point of view but generally her growers and shippers felt that ample reason existed in the peculiarities possessed by fruit from this area for the system to be continued. Protests against the rules which the freight container bureau adopted after holding numerous hearings extending over a considerable period did not bring their suspension but resulted in the taking of additional testimony respecting the issues involved. Meanwhile, the penalties had been collected on the early movement which consisted of "bulge pack" crates and the sum represented a sizeable item in the necessary outlay for transportation.

Into the picture at this point the Growers' and Shippers' League stepped, with proposals under which the matter would be adjusted and the extra expense saved for the remainder of the season. Conferences with the railway executives secured their approval for modified "bulge pack" requirements and the State Citrus Commission then undertook to certify fruit in containers complying therewith. Maximum bulges allowed under the agreed procedure on standard nailed crates are one and three-quarters inch for oranges and two inches and a half when the contents comprise grapefruit. Boxes in the wire bound type may have no more than one inch and a fourth if they convey oranges and an inch and one-half as regards to grapefruit. Less than the proportions previously permitted, the revised schedules nevertheless give sufficient leeway for the principal benefits from the "bulge pack" to be realized, most shipping interests concede. Reductions in the specifications for the "bulge," attained through the new regulations, materially lessen the quantities of fruit previously delivered in every box without corresponding additions to the price. Uniformity in pack, long a chief Florida need, was definitely advanced by the new standards and many discounts hitherto demanded will be eliminated.

Grove operators who are taxed in the final analysis with all the costs incident to moving fruit may find the difference between loss and profit on the season's business within the savings effected by the compromise charges for output marketed under the "bulge pack" procedure. Amounts involved in the transaction

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THE EFFECT OF CERTAIN FERTILIZER PRACTICES ON THE TIME OF MATURITY AND COMPOSITION OF GRAPEFRUIT AND ORANGES.

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distinct possibility as evidenced by the information developed during the last few years on this subject.

Roy (3) has reported increases in sugar content in fruit from orange trees following applications of manganese, and Roy and Bahrt (4) have shown increases in vitamin C content in the juice of oranges to follow applications of zinc or magnesium or magnesium and manganese to trees showing deficiency symptoms of these elements. Fudge and Fehmerling (2) have presented data showing the effects of these elements, either singly or in combination, on the composition of Pineapple oranges. They have reported material increases in total solids, sugars, vitamin C, and other fruit constituents to follow the application of these elements to trees showing marked deficiency symptoms. This paper is intended to give further evidence of the effect of these elements on fruit quality and to show their effect on time and rate of fruit maturity as judged by the ratio of total solids to acid.

Table 1. Effect of Magnesium Upon the Rate and Time of Maturity of Duncan Grapefruit.

Treatment		Date 1940 9/17	9/26	10/10	10/24	11/6	11/22	12/18	1941 1/8
N-P-K plus Cu-Zn-Mn spray	Total Solids	9.04	10.00	10.20	10.50	10.81	11.11	11.49	11.39
	Ratio	5.23	5.99	5.83	5.80	6.14	5.97	6.35	6.55*
N-P-K plus Cu-Zn-Mn spray and Mg on soil	Total Solids	9.43	10.53	10.59	11.33	11.65	11.78	12.63	12.59
	Ratio	5.42	5.75	5.82	6.09	6.33	6.44	6.41	6.66*

*Mature according to Florida Law.

Table 2. Effect of Magnesium Upon the Quality of Duncan Grapefruit, January 8, 1941.

Treatment	Juice Wt. %	pH	Citric Acid %	Total Solids %	Ratio	Reducing Sugars %	Sucrose %	Total Sugars %	Vitamin C mg./100 ml. of Juice
N-P-K plus Cu-Zn-Mn spray	48.7	3.24	1.74	11.39	6.55	3.73	2.72	6.59	45.1
N-P-K plus Cu-Zn-Mn spray and Mg on soil	46.5	3.22	1.89	12.59	6.66	4.19	3.04	7.39	47.4

Rate of Maturity and Composition of Grapefruit

Ample opportunity is afforded for studies on the effect of magnesium applications on tree growth, yield of fruit, and quality and maturity of grapefruit in the experimental plots at the Citrus Station. In a series of six plots, involving a study of the rate of potash application on Duncan grapefruit, a portion of each received applications of magnesium while the trees in the remaining part received none. Trees in the magnesium series received dolomite applications in December 1936 and 1937 and February of 1939 at rates totaling 4000 pounds per acre for the three applications and in February 1939 received Emjeo (magnesium sulfate) at the rate of two pounds per tree. Since that time no magnesium has been applied. Both series of trees have received equivalent amounts of nitrogen and phosphorus as well as spray applications of zinc, copper, and manganese. The trees receiving magnesium show normal vigor with slight or no deficiency symptoms while the other trees show typically severe magnesium deficiency as evidenced by bronzed foliage.

The data in Table 1 show the rate of maturity of fruit from the magnesium and no-magnesium series as judged by total solids to acid ratio from September, 1940, to January, 1941. It is evident from these data together with a knowledge of the variability existing between plots that there has been no difference in the time of maturity attainment nor in the actual rate of maturity of fruit produced on trees receiving magnesium as compared to fruit produced on trees not receiving applications of magnesium. This conclusion is borne out by analysis of fruit from these plots during previous years.

The results of analysis for other constituents related to the quality of fruit from these trees are given in Table 2. As can be noted, there is a material increase in the percentage of total solids and sugars and a slight increase in the percentage of total acids and vitamin C following applications of magnesium. These differences are considered highly significant in view of the consistency between the magnesium and no-magnesium treatments in all of the plots involved. In view of the increase in acid content and the greater but approximately same proportional increase in total solids following magnesium applications, the degree of maturity of fruit from the two treatments is not materially different. Taste tests on fruit from the two treatments have invariably indicated the distinct superiority of the fruit receivng magnesum, even during the 1940-41 season when the solids content in all fruit was unusually high. The greater total solids and sugar content of the fruit from trees receiving adequate amounts of magnesium is, no doubt, largely responsible for this superiority.

In another series of plots involving a comparison of basic and acidic fertilizers and varying amounts of magnesium similar results were obtained. Each treatment is in duplicate and includes seven trees each of Marsh, Duncan, Walters, and Excelsior grapefruit. The results presented in this paper are analyses of the Duncan variety. Each plot received equivalent quantities of nitrogen, phosphorus, and potassium, and all except plots 6 and 7 received soil and spray applications of zinc, copper, and manganese. Each tree has received a fertilizer application of approximately forty-five pounds annually.

The trees in Plots 2 and 11 have a very high percentage of bronzed foliage and produce medium crops of small sized fruits; those in Plots 3 and 10 show slight symptoms of magnesium deficiency and produce medium-to-heavy crops of good sized fruit; the trees in Plots 4 and 9 show very little evidence of magnesium deficiency and produce good crops of medium-to-large fruit; and those in Plots 6 and 7 produce light crops of foliage and fruit, indicative of deficiencies of copper, zinc, and manganese as well as magnesium. This condition in Plots 6 and 7 was particularly noticeable during the 1940-41

season following the severe cold of January, 1940.

Analysis of fruit from these plots for total solids and acid content was made from September, 1940, to January, 1941, and the resultant ratios of these constituents are presented in Table 3. Data in this table, as in Table 1, indicate no significant difference in time or rate of maturity of fruit from trees receiving magnesium as compared with fruit produced on trees receiving no application of this element for the 1940-41 season. It is also evident that fruits from Plots 6 and 7, receiving a fertilizer treatment commonly used in the past, has not matured earlier than fruit in the other plots.

The results of analysis for other constituents attendant upon fruit quality are given in Table 4. These data show that magnesium applications have resulted in increased solids, sugars, and vitamin C content of fruit. The fruit from trees receiv-

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Table 3. Effect of Magnesium Upon the Rate and Time of Maturity of Duncan Grapefruit.

			Date						
			1940						1941
Plot	Treatment		9/13	9/26	10/9	10/24	11/6	11/22	1/14
6 & 7	Acid Inorganic N-P-K	Total Solids	8.43	8.78	9.08	9.05	9.74	9.78	10.70
		Ratio	5.08	5.52	5.54	5.29	5.60	5.89	6.01
2 & 11	Basic Inorganic N-P-K plus Cu, Zn, Mn, and O MgO	Total Solids	8.65	9.09	9.18	9.63	9.92	9.95	10.55
		Ratio	5.21	5.90	6.04	6.06	5.51	5.72	6.28
3 & 10	Basic Inorganic N-P-K plus Cu, Zn, Mn and 2 MgO	Total Solids	9.08	9.55	9.92	10.20	10.62	10.55	11.04
		Ratio	5.44	5.93	5.73	5.86	5.80	5.80	6.53*
4 & 9	Basic Inorganic N-P-K plus Cu, Zn, Mn and 4 MgO	Total Solids	9.20	10.07	10.28	10.70	10.80	10.94	11.58
		Ratio	5.54	5.99	6.05	6.01	6.03	6.15	6.58*

*Mature according to Florida Law.

Table 4. Effect of Magnesium Upon the Quality of Duncan Grapefruit, January 14, 1941.

Plot	Treatment	Juice Wt. %	pH	Citric Acid %	Total Solids %	Ratio	Reducing Sugars %	Sucrose %	Total Sugars %	Vitamin C mg./100 ml of Juice
6 & 7	Acid Inorganic N-P-K	45.1	3.24	1.78	10.70	6.01	3.30	2.00	5.40	42.0
2 & 11	Basic Inorganic N-P-K plus Cu, Zn, Mn and O MgO	46.7	3.24	1.68	10.55	6.28	3.19	1.96	5.25	39.6
3 & 10	Basic Inorganic N-P-K plus Cu, Zn, Mn and 2 MgO	44.9	3.29	1.69	11.04	6.53	3.23	2.45	5.80	42.7
4 & 9	Basic Inorganic N-P-K plus Cu, Zn, Mn and 4 MgO	46.7	3.26	1.76	11.58	6.58	3.80	2.83	6.77	45.6

Table 6. Effect of Applications of Magnesium, Copper, Zinc, and Manganese on the Quality of Pineapple Oranges, February 4, 1941.

Plot	Treatment	Peel Thickness mm.	Juice Wt. %	pH	Citric Acid %	Total Solids %	Ratio	Reducing Sugars %	Sucrose %	Total Sugars %	Vitamin C mg./100 ml. of Juice
	N-P-K	3.89	52.1	3.83	.78	11.13	14.27	3.91	3.54	7.63	54.7
	N-P-K plus Cu-Zn spray	4.16	48.7	3.72	.89	11.66	13.10	3.81	3.75	7.76	64.4
1, 2	N-P-K plus Cu-Zn-Mn spray	4.19	51.8	3.69	.85	12.19	14.34	4.08	3.93	8.21	63.6
	N-P-K plus Mg on soil	3.28	53.8	3.70	.95	13.42	14.13	4.54	4.35	9.11	71.6
	N-P-K plus Cu and Mg on soil	3.37	51.7	3.70	.93	13.12	14.11	4.46	4.33	9.02	70.9
&	N-P-K plus Cu-Zn spray and Mg on soil	3.48	52.4	3.65	.94	12.90	13.72	4.29	4.40	8.92	69.7
3	N-P-K plus Cu-Zn-Mn spray and Mg on soil	3.60	52.9	3.65	.96	13.37	13.93	4.43	4.22	8.87	69.8
	N-P-K plus Mg on soil	3.49	48.3	3.76	.84	12.43	14.80	4.01	4.35	8.58	65.8
6, 7	N-P-K plus Cu and Mg on soil	3.58	51.3	3.85	.69	12.80	18.55	4.17	4.66	9.15	65.2
&	N-P-K plus Cu-Zn spray and Mg on soil	3.64	48.9	3.72	.90	13.09	14.54	4.22	4.63	9.09	71.5
8	N-P-K plus Cu-Zn-Mn spray and Mg on soil	3.78	49.2	3.68	.94	13.10	13.94	4.22	4.54	9.00	70.8

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AUCTION CONCERNS INDICTED

Big news of the month in the citrus world was the indictment by a federal grand jury in Los Angeles of ten fruit auction concerns and a number of citrus shipping organizations in Florida and California. The indictment charges violation of the federal anti-trust laws and "illegal marketing agreements in restraint of trade."

Specifically it is charged that "the effect of the conspiracy was to control, restrict, limit and restrain the channel through which such fruits are distributed and marketed; to exclude persons, firms, associations and corporations from engaging in the production, distribution and marketing of such fruits and to fix, maintain and stabilize prices."

Parties to the indictment, including the California and Florida co-operative agencies, disclaim any act which might be construed as being in violation of any laws or policies of the federal government; that the only contracts or agreements made by the co-operatives was with the federal government in the effort to maintain prices for the growers.

A statement by the Chief of the Pacific Coast offices of the Anti-trust Division of the Department of Justice would seem to indicate that the government theory is that the alleged "conspiracy" had as its initial purpose to maintain prices at an unreasonably high level. If this is true, it is in direct contradiction to the belief of many citrus growers that the effect, if not the purpose, of the fruit auction markets is to hold prices at a level too low to afford a reasonable profit to the grower.

Whatever the final outcome of the litigation, it will be watched with keen interest by citrus growers everywhere and due to the importance of the case it is probable that final decision must await the action of the highest court in the land.

PRE-HOLIDAY PRICES REACH HIGH LEVEL

Spurred by increased purchasing power on the part of the consuming public, abnormally light shipments and improving quality of the fruit, prices for Florida citrus fruits on the ten leading auction markets for the week ending Dec. 20 reached the highest price for a corresponding week during the past eight years, according to the records of the Growers' Administrative Committee.

Prices for tangerines for the week ending Dec. 20 averaged $4.44 for one and three-fifths bushel boxes; oranges averaged $2.55 and grapefruit $2.50, a marked increase over prices received for a corresponding period in recent years.

That curtailed shipments had much to do with the better prices ruling during the pre-holiday week is seen in the fact that orange shipments up to Dec. 18 amounted to only 10,440 cars, as compared with 14,607 cars on the same date a year ago; grapefruit shipments were 4,050 cars compared with 5,944 cars last year; while tangerine movements totalled 1,409 cars against 2,204 last year.

With the increased purchasing power in consumer markets growers should receive satisfactory prices throughout the season if only quality fruit is shipped under controlled volume.

CITRUS FRUITS GAIN FAVOR

Gratifying to every citrus grower must be the report of the federal-state market news service which shows that the per capita consumption of citrus fruits is steadily gaining in favor with the consuming public.

A chart issued by the service covering the period from 1909 to 1941, shows that apples, leading competitor of citrus, have steadily lost in favor as citrus fruits have gained. In 1911, when apples reached the highest per capita consumption, the average apple consumption for the United States as a whole was 75 pounds for each man, woman and child in the nation, while citrus fruits fell far behind, with a per capita consumption of only 18 pounds.

In marked contrast to this, it is estimated by the federal-state agency that this year the consumption of citrus fruits per capita will be 65 pounds, while the apple consumption will be less than 40 pounds.

Realization by the public of the health-giving qualities of citrus fruits, better merchandising conditions and the reasonable prices at which citrus may be secured have had much to do with the changed positions of America's two leading fruit crops.

CITRUS CONCENTRATES

Florida is to be congratulated upon the action of the federal government in providing for the erection of processing plants for the manufacture of citrus concentrates on a gigantic scale.

First of these contracts was signed with B. C. Skinner, owner of Citrus Concentrates, Inc., of Dunedin, under the terms of which a processing plant costing $1,500,000 and capable of producing 200 gallons of citrus concentrates daily, will be erected. Later advices from Washington are that other similar plants of like capacity will be established in the Ridge Section of Polk county.

The product of these plants will be used largely by the armed forces of the United States and any surplus will be shipped to Britain and other United States allies for use by the armies and navies of those nations.

It is estimated that the Dunedin plant will use approximately 1,500,000 boxes of fruit during the season and that its operation will provide employment for 500 persons.

AN UNPUBLICIZED AGENCY

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will substantially exceed the sums collected for conducting the Growers' and Shippers' League of Florida since the organization was started, not much less than thirty years ago. On numerous occasions in the intervening period, the agency has achieved like triumphs toward reducing the freight burdens borne by fruit and vegetable producers. Under the emergency created by the advent of citrus canker into Florida shortly after the League had been formed, yeoman service was rendered, as these chronicles related recently. Activities directed by L. B. Skinner, president, Lloyd S. Tenney, secretary-manager, and Frank Stirling, field superintendent, the three composing the first official personnel, laid the foundations for the successful eradication endeavors of the State Plant Board.

Formation of the Growers' and Shippers' League took place at a mass meeting in the old Tampa Bay Hotel Casino, Tampa. Called by William Chase Temple when he was retiring as general manager of the Florida Citrus Exchange, the conference was generally believed to be for starting a rival marketing agency. Whatever may have been Mister Temple's purposes in the premises, any intent that a new selling group should emerge from the proceedings evaporated under speeches by Doctor John H. Ross, Robert P. Burton, Senior, Eugene L. Pierce and several others. Assistance in holding down tendencies toward a mass bolt from the Citrus Exchange was rendered by work among individual delegates, which Myron E. Gillett led skillfully, with this commentator enlisted modestly on his staff. Discussions finally diverted themselves into debate respecting the need for a state-wide body dealing with problems outside the marketing field. In a measure all dressed up but without anywhere to go, the session grabbed the idea and created the Growers' and Shippers' League.

Persons from a distance began leaving the Casino and adjournment was about to be taken when Burks L. Hamner, then a newcomer to Florida, rose upon his hind legs and secured recognition from the chair. Organizations on paper made attractive ornaments, he declared, but without the sinews of war they could perform little justifying their existence. Subscriptions to an operating fund in fair amounts followed Hamner's eloquent speech and he was appointed as chairman of a finance and membership committee. Drafting the Florida Grower magazine as a principal means for reaching the people, Burks put on a high-pressure campaign and sold many memberships. Publicity was given the League on an all-out basis in connection with the endeavor, for the first and the last time.

After the citrus canker elimination had been taken over by the State and the federal plant protection authorities, the Growers' and Shippers' League concentrated its energies on transportation problems. Service has been rendered the supporting interests ever since, with a smile but minus the sounding of trumpets. Standing by loyally during whatever industry crises have developed during subsequent decades, the League was particularly helpful in a quiet way while the Mediterranean fruit fly menace continued.

Skinner gave way as president after awhile but his successors have carried on in his tradition, among them, if memory serves correctly, Robert B. Woolfolk, and at present the office is capably filled by R. D. Keene. Tenney was replaced with J. Curtis Robinson, a traffic expert throughout the country, and following his departure like talent took up the torch at the Orlando headquarters. Staff members now serving the organization obviously know their business, else the "bulge pack" accomplishment could not have been achieved.

Possessing a passion for performance that escapes telling in Gath and publishing in the streets of Askelon, these efficient young men possibly deserve to be left anonymous.

RURAL WOMEN IN MARION AID IN DEFENSE PROGRAMS

Home demonstration clubs in Marion County are making a fine record in cooperating with the defense program, it is reported by Mrs. Kathryne R. Parrish, home agent. The Moss Bluff Club took money from the community house funds and fair programs and bought a $100 defense bond, while the Conner Club purchased a $25 bond. Most of the clubs are buying stamps.

The Conner Club has just completed a Red Cross first aid class, with 13 women receiving certificates. Similar classes are being organized at Lowell and Moss Bluff. Mrs. Parrish says that all clubs in the county are doing Red Cross sewing.

Florida Orange Festival Set For Week of January 19th to 24th

Growers, shippers and fruit brokers will 'come into their own' at the 1942 Florida Orange Festival, which is set for the week of January 19 to 24, in Winter Haven, center of the state's citrus-production area. For the forthcoming 18th annual festival is designed to carry out, more completely than ever, the citrus theme of the state's greatest industry, and those who grow, ship and sell the fruit will be given every opportunity to visit the Festival, participate in its full week of programs and learn what the association is doing to make the big exposition representative of their industry as a whole.

Practically every phase of the citrus industry will be presented at the Festival, including comprehensive displays of citrus, the allied industries and commercial products, which, combined with various educational and entertainment features, guarantees a Festival second to none in its history.

The festival is unique in that its site is that of a producing orange grove in the northwestern part of Winter Haven, only a few blocks from the business district. This appropriate setting has resulted in much favorable publicity for the show in years past, and continues to appeal to the sentimentalities of visitors, especially tourists from the North and West, who never tire of advertising the "Orange Festival in an Orange Grove."

This year the Festival theme will be "Citrus and More Citrus" as the directorate feels that even the greatest emphasis they can put on this theme is hardly sufficient to drive home to the people of the United States the importance of citrus in the health diet of the nation, especially in times of national emergency when the well-being of the millions, young and old, is a matter of major concern. But this year the Festival is in a position to drive home these fundamental truths of Citrus as a vitalizer and energizer as never before in its history—due to the plans to bring to the show on its fifth day, Friday, Jan. 23, 2000 members of the United Fruit and Vegetable association of America, as well as many independent buyers and brokers representing many of the major markets of the country.

The fruitmen will close their national convention (to be held at Belleair, Fla., Jan. 17-23) by spending the last day of the session at Winter Haven, as guests of the Festival association and the Florida Citrus Commission. They will be entertained at a barbecue on a lake front near the Festival grounds, and will be guests of the Commission at this function and later of the Festival directorate on the grounds, to which they will be admitted free. Governor S. L. Holland will also visit the Festival the same day, and this happy combination of the country's leading fruitmen and the state's chief executive (himself a Polk county grower and a staunch advocate of the Festival's primacy as an advertising medium for the citrus industry) is expected not only to make this the banner day of the Festival but to serve as a booster for future citrus shows.

It is planned to open the Festival week with the usual observance of "School Day" on Monday, Jan. 19, with a grand street parade and free admission for public school pupils and teachers. Other days will be set aside to promote the various phases of Florida citrus culture and marketing, one of the most important being "Agriculture Day" or "Mayo Day," when State Commissioner Nathan Mayo will be honor guest and speaker. The annual Press Breakfast will be featured late Friday night and every day will be a gala occasion for all visitors, with plenty of entertainment and amusements for all ages.

Plans for the 1942 Festival are the result of the reorganizing of the directorate in mid-summer and the naming of a board of 22 prominent citrus growers and shippers and business men whose main objectives are to set forth more fully than ever every phase of citrus culture from the planting of the nursery stock, through the growing, picking and packing of fruit to its sale in the consumer markets. They expect to follow Governor Holland's injunction, given at the 1941 show, to make the Festival "The Mardi Gras of the

Florida Citrus Industry," so that it may become a more effective advertising medium for the industry and the state.

The visit of the fruitmen, together with shippers from the state of Florida, is being publicized widely, not merely as an innovation, but with the object of setting a precedent that will bring these men to future festivals, affording them still more opportunity to learn the problems and policies of the citrus industry from the 'growing end,' and to bring about a better understanding between the grower and shipper in Florida and the market man and the consumer throughout the country. With this in view, the Festival association is encouraging displays that will set forth in greater detail every phase of the growing and marketing of every variety of citrus fruit, and is urging more individual displays by growers and shippers, instead of the large exhibits by groups of houses, where educational value is often sacrificed to decorative appeal. Forty large booths are available for such purposes in the two permanent exhibition halls and practically all had been sold by the holidays.

BUY UNITED STATES DEFENSE BONDS AND STAMPS!

THE EFFECT OF CERTAIN FERTILIZER PRACTICES ON THE TIME OF MATURITY AND COMPOSITION OF GRAPEFRUIT AND ORANGES.

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ing fertilizer applications containing 2 percent magnesum oxide is definitely higher in total solids and sugars and slightly higher in vitamin C content than fruit from trees receiving no magnesium. Likewise, fruit from trees receiving applications containing 4 percent magnesium oxide is higher in these constituents than fruit from the trees receiving the 2 percent treatment. The differences in the first case have averaged greater from year to year, although the differences between no magnesium and the 2 percent magnesium treatment and the 2 percent treatment and the 4 percent magnesium treatment are of approximately the same magnitude for the 1940-41 season.

As pointed out previously, the trees in Plots 6 and 7, which do not receive applications of copper, zinc, and manganese, produced very light crops during the 1940-41 season, and consequently the ill effect of magnesium deficiency on quality is not so evident as in Plots 2 and 11. During previous seasons when the crop on the trees in Plots 6 and 7 was greater than in 1940-41, the fruit was inferior in quality to that produced on the trees in Plots 2 and 11.

Rate of Maturity and Composition of Pineapple Oranges

Changes in constituents attentive to quality, as a result of fertilizer applications, are even more apparent with oranges than with grapefruit. The effect of magnesium, copper, zinc, and manganese on fruit maturity and composition is readily apparent from analysis made on fruit from the Nitrogen Source Grove at the Experiment Station. Briefly, the grove is divided into five parts receiving nitrogen from different sources. Each of these parts is subidivided into two plots, one receiving phosphorus from superphosphate (Plots 1, 2, 3, 4 and 5) and the other receiving phosphorus from bonemeal (Plots 6, 7, 8, 9 and 10). Due compensation is made for the nitrogen contained in the bone-meal. All of the trees have received sulfate of potash as the source of potassium. After being devoted to this N-P-K program for a number of years, deficiencies of magnesium, copper, zinc, and manganese were apparent and became particularly severe in the trees in the superphosphate series. Subsequently, treatments involving the use of these fertilizer elements, either singly or in combination, were included in the plots. Applications of copper sulfate at the rate of two pounds per tree were made to a row of trees across each plot series in 1934 and 1935. Since the spring of 1938 one row of trees across each plot has received annual spray applications of copper and zinc, and another row, copper, zinc, and manganese, a part of each with and a part without soil applications of magnesium in Plots 1, 2, 3, 4, and 5. Plots 6. 7, 8, 9, and 10 received no applications of magnesium until the spring of 1940. In this study analyses were made of fruit from the first three plots in each series.

Data in Table 5 give ratios of total solids to acid in the fruit from different treatments from September, 1940, to February, 1941. During the early part of the season slightly higher ratios are evident in the fruit from the trees showing increasing deficiency symptoms or in the fruit having lower solids levels. However, these differences were not of sufficient magnitude for the 1940-41 season, at the time the fruit was adjudged mature by the Florida maturity standards, to materially alter the time that the fruit could be marketed. It should also be pointed out that the trees showing very apparent deficiency symptoms, notably the check or N-P-K treatment, produce very light crops and those which are produced are largely unmarketable. Fudge and Fehmerling (2) presented data on juice analysis of fruit from these plots which indicated earlier maturity of the fruit from the check plots and other plots exhibiting the more severe deficiency symptoms for the 1939-40 season. It is probable that seasonal variations exist. It might be expected that differences in maturity would be less noticeable during a late season such as 1940-41. An accumulation of heat units during early fall when the fruit is approximating maturity might possibly make differences in the stage of maturity of greater magnitude.

Data in Table 6 show the effect on composition of fruit of magnesium, copper, zinc, and manganese singly or in combination as compared with the check or N-P-K treatment. Applications of these elements, particularly magnesium, have materially enhanced the quality of the fruit, as evidenced by increases in acid, total solids, sugars, and vitamin C content for the 1940-41 season. In

(Continued on page 18)

Table 5. Effect of Applications of Magnesium, Copper, Zinc, and Manganese on the Time and Rate of Maturity of Pineapple Oranges.

Plot	Treatment		Date 1940 9/30	10/14	10/28	11/12	11/25	12/30	1941 2/4
	N-P-K	Total Solids	8.51	8.92	9.60	10.13	10.37	11.18	11.13
		Ratio	6.65	7.56	9.23*	10.13	11.65	13.47	14.27
1, 2	N-P-K plus Cu-Zn-Mn spray	Total Solids	8.43	9.03	9.61	10.46	10.80	11.56	12.19
&	N-P-K plus Mg on soil	Ratio	5.90	7.00	7.57	9.60*	9.91	13.14	14.34
3		Total Solids	9.06	9.88	10.44	11.42	11.76	12.90	13.42
		Ratio	5.18	6.63	7.68	9.14*	9.72	13.16	14.13
	N-P-K plus Cu-Zn-Mn spray and Mg on soil	Total Solids	9.02	9.68	10.56	11.15	11.52	12.89	13.37
		Ratio	5.21	5.90	7.14	8.45*	9.22	12.16	13.93
	N-P-K plus Mg on soil	Total Solids	8.25	8.82	9.59	10.37	10.79	11.91	12.43
6, 7		Ratio	6.16	7.74	9.05*	10.07	10.79	13.85	14.80
&	N-P-K plus Cu-Zn-Mn spray and Mg on soil	Total Solids	8.85	9.27	10.23	10.39	11.28	12.73	13.10
8		Ratio	5.53	7.19	8.53*	8.88	9.56	13.40	13.94

*Mature according to Florida Law.

The LYONIZER

Department

COMPILED BY THE LYONS FERTILIZER CO.

Reports of Lyons Field Men . . .

SOUTHWEST FLORIDA
F. W. (Felton) Scott

Warm weather together with periodic rains have contributed to delayed maturity and poor color on citrus fruits in this section. However, groves are looking exceptionally good and most growers are now completing their fall application of fertilizer. Truck growers throughout the territory are now preparing their land and seed beds for the spring crop, which should be about normal.

EAST COAST & LAKE SECTION

The east coast is planning one of their best spring crops. There has been an ample amount of rain during the fall and with favorable conditions during the spring this section should come in with a bumper crop. The lake is also planning a heavy planting. While the prices on beans have not been very good, the lake section has produced a heavy yield of beans in the fall and are feeling optimistic over later plantings.

NORTH CENTRAL FLORIDA
V. E. Bourland

Rains during the latter part of December were of a great deal of benefit. Also the cool weather occuring during the past few weeks has been extremely beneficial to both citrus and vegetable crops. Due to the most unseasonable weather in this section for the past two months we note that some trees are beginning to bloom, and as a further result of the hot rainy weather we have an unusually heavy droppage of fruit all over the territory. Vegetable crops are looking better at this time than they did last month.

POLK COUNTY
J. M. (Jim) Sample

This section has had an abundant rainfall during December. As a result trees have received full benefit from the fall fertilizer application and are now in best possible shape for next year's crop. Groves for the most part have been laid by and cultivation stopped. We are advising our growers in this section to do a thorough job of pruning at this time and at the same time we are suggesting that all large cuts be painted. Most growers are through with their fall application of fertilizer. It is our suggestion in this territory that all groves receiving an application of fertilizer in the spring have included in the mixtures applied liberal application of secondary plant foods.

WEST CENTRAL FLORIDA
E. A. (Mac) McCartney

As reported several times before in the Lyonizer this section has an extremely light crop of fruit this season. However, groves throughout the territory are in excellent condition at this time and growers are extremely optimistic over prospects for the coming year (We hope this optimism will be realized). Vegetable growers are coming along with their crops in fine shape and berries are beginning to move in some volume from the Plant City area.

HILLSBOROUGH & PINELLAS COUNTIES
C. S. (Charlie) Little

The cool weather during the middle and latter part of December is fine for the fruit and vegetables in this section. In this section some trees had started to put out a new growth and of course this is not advisable at this season of the year. However, with this cool weather the trees will probably go dormant and this coupled with plenty of moisture should result in an excellent bloom this spring. The activity regarding the buying of fruit is at a minimum now. In fact with the exception of tangerines it is difficult to make a satisfactory sale. However, tangerines are selling at very good prices.

SOUTHWEST POLK COUNTY
M. L. (Marvin) Sherertz

Marvin Sherertz is a newcomer with the LYONIZER. However, we are looking forward to his reports and feel sure that he will give us some good information from the territory that he will cover. Marvin was born and reared on a citrus grove near Ft. Meade, Fla. He attended and graduated from Ft. Meade High School and later attended the University of Florida. He has a host of friends throughout South Florida and we feel sure that you will in the months to follow enjoy reading what he has to say in the LYONIZER.

Horticultural Hints

Most growers throughout the citrus belt have made their fall application of fertilizer. Those growers that have not done so will go forward with this application immediately. With the rainfall that we have had during the past six weeks it is safe to predict that the trees have assimilated a sufficient amount of food to give the necessary energy and vitality to set a large crop of fruit this spring.

We are recommending that all growers keep a careful check on their groves during the next few weeks and if they find any of their property showing the slightest signs of hunger that they immediately make application of a top-dresser carrying ample amounts of quickly available nitrogen. It has been definitely established that one of the best times to apply your secondary plant food elements is in the spring application. We suggest the liberal use of soluble magnesium and manganese at this time and wherever it is necessary we also recommend the use of copper.

It is very important that you do a thorough job of pruning at this time. By thorough job, we mean that all dead wood and superfluous growth should be removed from the tree at this time. In removing this wood you will not only make for a better physical condition of your trees but you will accomplish a great deal in the control of melanose on your next year's crop.

It is our suggestion that you keep all cultivation tools out of the grove for the time being. With a little cool weather the trees will go dormant and this is what we would like to encourage now.

Vegetable growers all over the state are getting ready for their spring plantings. We realize that most of the vegetable growers are thoroughly posted on the best methods of production, but we do want to remind you that if you are to obtain the very best results then it is absolutely necessary to prepare your soil properly, correct extreme acidity, obtain pure seed and use the fertilizer that is especially adapted for your soil and your crop.

If you are not absolutely sure about these conditions, then call in the Lyons Field Man.

THE EFFECT OF CERTAIN FERTILIZER PRACTICES ON THE TIME OF MATURITY AND COMPOSITION OF GRAPEFRUIT AND ORANGES.

(Continued from page 14)

the absence of magnesium in Plots 1, 2, and 3, application of the other elements has resulted in material increases in the above constituents, but where magnesium has been applied the addition of these elements has not aided in such increases. This may possibly be explained by the gradual improvement of the trees receiving magnesium over a period of years, whereby they are better able to absorb the comparatively small quantities of other elements present, but is more likely due to the fact that the trees receiving magnesium and the other elements as well, consistently set larger crops than the trees receiving magnesium only, hence their effect for a particular season may be over-shadowed by the comparatively heavy cropping. The latter explanation seems more probable in view of the analysis of the fruit from these plots for the 1939-40 season, reported by Fudge and Fehmerling (2), during which season the fruit produced on the trees receiving N-P-K and magnesium was decidedly inferior to the fruit from the trees receiving copper, zinc, and manganese in addition to these elements.

In the bonemeal plots (6, 7, and 8) the treatments involving applications of copper, zinc, and manganese, singly or in combination, in addition to soil applications of magnesium, have resulted in the production of fruit of superior quality to that produced on trees receiving magnesium only as evidenced by increases in total solids, sugars, and vitamin C.

In view of these analyses, together with available data from previous years, it seems safe to conclude that following the application of magnesium, copper, zinc, and manganese to trees on a great many of the soils in Florida devoted to citrus there is a marked improvement in fruit quality along with the general improvement in tree vigor and crop production. The time of maturity attainment in grapefruit has not been materially affected by the application of these elements. In Pineapple oranges a probable slight delay in legal maturity is indicated; however, as pointed out previously in this paper, the difference in the time of maturity between the check and other treatments is not of great magnitude.

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NORTH LIKES SWEET ORANGE JUICE, AND SOUTH PREFERS ACID

That Northern and Western folks like oranges with a higher sugar content than the Southerner's choice has been indicated in tests by Dr. A. L. Stahl, State Experiment Station horticulturist.

Dr. Stahl made his test with more than 200 persons representing all sections of the country, having them take samples of orange juice of varying sugar and acid content. After sampling the juices, each person signified that which he liked best.

The majority of those from the North and West definitely favored juice with a high sugar content, while those from the South were just as definitely in favor of a relatively high acid content. "Of course," Dr. Stahl said, some Northerners and Westerners like acid fruit such as the Southerners likes, and vice versa, but our tests showed a marked tendency among folks from the North and West to lean toward sweet fruit and those from the South to prefer the acid."

Eighty-five per cent of the persons in the tests preferred juice free of orange rind oil, five per cent were indifferent about rind oil content, and 10 per cent liked juice containing rind oil.

Most people, Dr. Stahl's tests also showed, like a slight carbonation of their orange juice — just enough to provide a sparkling in the glass.

The Soil Science Society Of Florida....

BY R. V. ALLISON
HEAD DEPARTMENT OF SOILS,
UNIVERSITY OF FLORIDA

I am very glad for this opportunity to say a few words regarding the Soil Science of Florida.

While the Society has quite a resounding title, its objectives are simple and, we believe, they are vital—in fact, very vital in these or any other times. As stated in the simple constitution, that was developed at the time of the organization meeting in Hollywood in April, 1939, the purpose of the Society are the development and application of Soil Science. It is believedd that the brief remarks that follow will indicate quite clearly that the applied or extension phases should be emphasized, and are being emphasized, more than the development phases. This is why we are trying to organize a forum on which the grower, the extension worker, the fertilizer manufacturer, the teacher of vocational agriculture, the research worker, or representatives of any one of a dozen other groups having a common interest in the practical problems involved in an efficient and effective handling of soil and plant relationships under Florida conditions can appear for a full and complete discussion of the many sided factors involved. The value of this association and contact is well envionsioned by Provost Newell when he said:

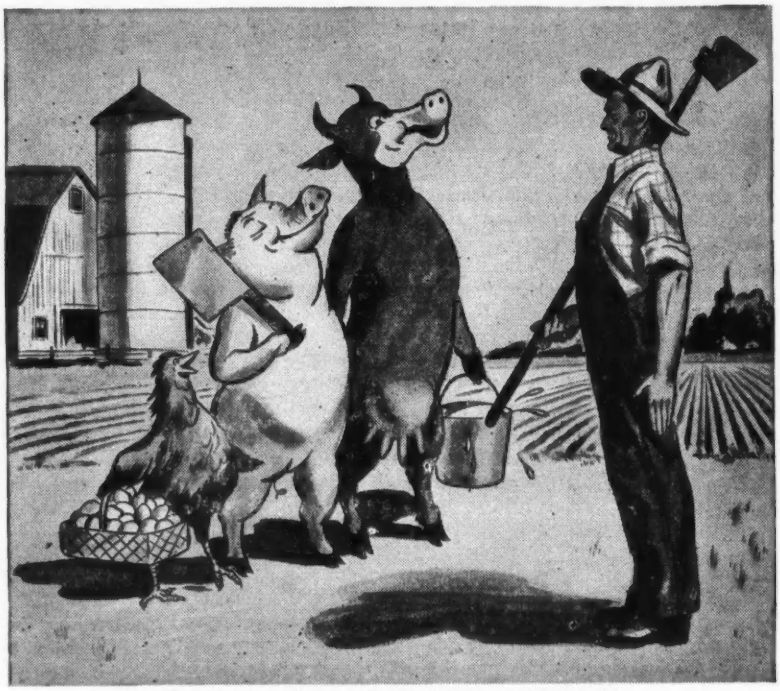
"There is an important place in Florida agriculture for a forum of this type that can be used as a 'clearing house' for the technical worker and the grower, as well as others engaged in closely related enterprises that find common interest in the practical application of the basic principles of Soil Science. The technical worker may be able to assist the grower from time to time with some of his knotty problems, but no less will the grower assist the technical worker by this opportunity to bring his problems and experience for a good and thorough discussion. I fear this latter angle of benefit is too frequently overlooked."

In consequence of the above, the membership of the Society is as varied as the fields of interest involved. Furthermore, once the really practical purposes of the forum became known, the membership increased quite rapidly until we now have nearly six hundred and fifty names. The only requisite for membership in the Society, as prescribed in Article III of the Constitution is a definite interest in its objective. The regular annual dues are $1.00 including a copy of the proceedings.

The activities of the Society that are being directed towards the accomplishment of the above objectives might be divided into two sections or parts, the first being the work of a number of standing subject matter committees designed to cover the entire field of soil and plant relationships and the other, the annual meetings at which time papers on topics

(Continued on page 14)

Food for Freedom . . .
Food for Victory . . . Forwar-r-r-d, March!



The American farmer shouts, "Come on. Let's go!"

More milk, more pork, more eggs and poultry; more fruits, vegetables and vegetable oils . . . These are foods America needs — and foods our Allies need. These foods from American farms will help win the war on every front.

Farmers are now enlisted in the greatest food production program ever known — the Food for Freedom program organized by the United States Department of Agriculture.

Your promise to meet your food production goal, puts you literally on the fighting front. Now food will flow from your farm — from every farm — so that every American fighting man, every American war worker and civilian, can have the strength-building foods that victory requires.

Beyond our own huge war-time needs, we are pledged to deliver to Great Britain vast quantities of milk, pork, eggs, poultry, fruit, vegetables and vegetable oils. These are foods her people need so they can fight and work shoulder to shoulder with us.

Now is the time to get your farm ready — your implements in shape. This is the zero hour for getting all set to produce the foods that will help us and our allies smash through to victory and peace.

Food is a big gun in this war. Food will win it. It will break the enemy down. Foods which you produce on your farm are just as vital as planes, ships, tanks.

Your own farm goal is a vital link in a great chain of effort. No chain is stronger than its weakest link. That's why what you do, on your farm, is so everlastingly important.

Food for Freedom . . . Food for Victory!

YOUR FARM CAN HELP

★ UNITED STATES DEPARTMENT OF AGRICULTURE ★

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